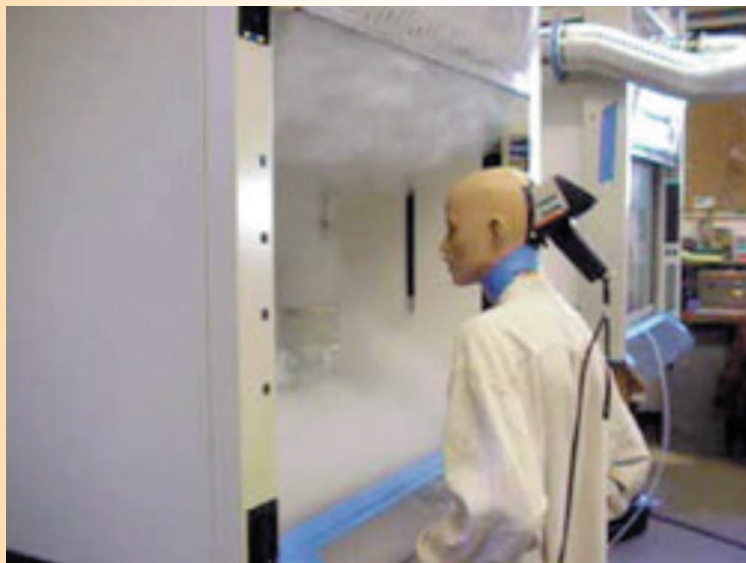


REVOLUTIONARY FUME HOOD SAVES ENERGY AND PROTECTS WORKERS



This high performance fume hood is safer and more efficient than previous technology.

An advanced, energy-efficient laboratory fume hood technology developed by scientists at the Lawrence Berkeley National Laboratory with the support of the California Energy Commission promises to save millions in energy costs while protecting workers at all types of laboratory facilities.

The Challenge

Many years ago lab workers had to put up with dangerous exhausts and pervasive odors of solvents and solutions. However, today's typical lab maintains a strong emphasis on workers' health and

safety, as well as environmental concerns, making these labs safer and more pleasant workplaces than those built previously. One area of improvement is in the technology behind "fume hoods."

Fume hoods are commonplace in lab, manufacturing and research facilities. They capture, contain, and exhaust hazardous fumes created in industrial processing or lab experiments. But they do this at a considerable energy penalty. The power load comes from the fan which moves air out the hood and conditions make-up air.

How much energy do labs use? The typical six-foot wide hood, operating 24 hours per day at 1200 cubic feet per minute, consumes more energy than an average house. With multiple fume hoods operating, a lab may use four to five times more energy than a

commercial enterprise would in the same place. On a square foot basis, laboratories use considerably more energy, and create more emissions, than most other building types. Laboratories with fume hoods are one of the state's biggest energy users.

Berkeley Lab High Performance Fume Hood

In a technological leap forward, the new Berkeley Lab High Performance Fume Hood reduces airflow by up to 70 percent compared to standard laboratory fume hood installations. While still protecting workers' health, this technology uses a more efficient "push-pull" approach to contain the fumes and move the air. Small supply fans are located at the top and bottom of the hood's face, pushing air into the hood and into the user's breathing zone, setting up a "divider" of air at the face. The air divider prevents fumes from reaching the user standing in front of the hood.

Consequently, the exhaust fan can be operated at a much lower flow. Because less air is flowing through the hood, the building's environmental conditioning

(Cont.)



system can be downsized, saving both energy and initial costs of construction. From lower air conditioning costs to simpler air control systems, this new “low flow” fume hood can reduce a lab’s energy consumption and peak power usage.

In California alone, the new fume hood could save 360 gigawatt hours of energy or \$30 million annually – about \$1,000 for each installed fume hood. This would mean hundreds of thousand of dollars per year in energy costs at a typical multi-laboratory facility.

Design Delivers Benefits

The Berkeley High Performance Fume Hood can be used at pharmaceutical and biotechnology facilities, industrial shops, refineries, medical testing labs, university research labs, and high school chemistry labs. Beyond the ventilation and energy benefits, the fume hood offers a number of key advantages:

- Simpler design than traditional fume hood systems resulting in easier and less expensive installations.
- Constant volume operation ensures that energy efficiency is not dependent on the operator.
- Airflow patterns reduce dangerous eddy currents and vortexes, improving containment and exhaust performance.

Researchers Breathe Easier

The initial cost of the High Performance Fume Hood is more than offset by savings on the smaller ducts, fans, and simpler control systems that can be used alongside the Berkeley design. New construction or remodeling of labs and other high-tech facilities can easily justify the new technology on energy cost savings alone. By replacing existing hoods with High-Performance Fume Hoods, these labs can increase the number of hoods to improve exhaust performance so their energy bills are lower and their workers are safe working around dangerous fumes.

The California Energy Commission collaborates with innovative researchers and organizations to develop cost-effective energy technologies. Products like the Berkeley Lab High Performance Fume Hood strengthen

California’s economy, increase energy supply, protect the environment and reduce electricity demand at peak times. Now that’s a good bargain.



Berkeley Lab's High Performance Fume Hood.

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